

SEQUENCE LISTING

<110> Stapleton, Jack
Xiang, Jinhua
George, Sarah
University of Iowa Research Foundation

<120> GB VIRUS C AND METHODS OF TREATING VIRAL INFECTIONS

<130> 875.076US1

<150> US 60/421,408

<151> 2002-10-24

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<170> FastSEQ for Windows Version 4.0

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<212> DNA

<213> Hepatitis G virus

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Lys	Leu	Ala	Arg	Gly	Ala	Phe	Pro	Leu	Ala	Leu	Leu	Met	Gly	Ile	Ser	705	710	715
Ala	Thr	Arg	Gly	Arg	Thr	Ser	Val	Leu	Gly	Ala	Glu	Phe	Cys	Phe	Asp	725	730	735
Val	Thr	Phe	Glu	Val	Asp	Thr	Ser	Val	Leu	Gly	Trp	Val	Val	Ala	Ser	740	745	750
Val	Val	Ala	Trp	Ala	Ile	Ala	Leu	Leu	Ser	Ser	Met	Ser	Ala	Gly	Gly	755	760	765
Trp	Lys	His	Lys	Ala	Val	Ile	Tyr	Arg	Thr	Trp	Cys	Lys	Gly	Tyr	Gln	770	775	780
Ala	Val	Arg	Gln	Arg	Val	Val	Arg	Ser	Pro	Leu	Gly	Glu	Gly	Arg	Pro	785	790	795
Thr	Lys	Leu	Leu	Thr	Phe	Ala	Trp	Cys	Leu	Ala	Ser	Tyr	Ile	Trp	Pro	805	810	815
Asp	Ala	Val	Met	Met	Val	Val	Val	Ala	Leu	Val	Leu	Leu	Phe	Gly	Leu	820	825	830
Phe	Asp	Ala	Leu	Asp	Trp	Ala	Leu	Glu	Glu	Leu	Leu	Val	Ser	Arg	Pro	835	840	845
Ser	Leu	Arg	Arg	Leu	Ala	Arg	Val	Val	Glu	Cys	Cys	Val	Met	Ala	Gly	850	855	860
Glu	Lys	Ala	Thr	Thr	Ile	Arg	Leu	Val	Ser	Lys	Met	Cys	Ala	Arg	Gly	865	870	875
Ala	Tyr	Leu	Phe	Asp	His	Met	Gly	Ser	Phe	Ser	Arg	Ala	Val	Lys	Glu	885	890	895
Arg	Leu	Leu	Glu	Trp	Asp	Ala	Ala	Leu	Glu	Pro	Leu	Ser	Phe	Thr	Arg	900	905	910
Thr	Asp	Cys	Arg	Ile	Ile	Arg	Asp	Ala	Ala	Arg	Thr	Leu	Ser	Cys	Gly	915	920	925
Gln	Cys	Val	Met	Gly	Leu	Pro	Val	Val	Ala	Arg	Arg	Gly	Asp	Glu	Val	930	935	940

Leu	Ile	Gly	Val	Phe	Gln	Asp	Val	Asn	His	Leu	Pro	Pro	Gly	Phe	Val	945	950	955	960
Pro	Thr	Ala	Pro	Val	Val	Ile	Arg	Arg	Cys	Gly	Lys	Gly	Phe	Leu	Gly	965	970	975	
Val	Thr	Lys	Ala	Ala	Leu	Thr	Gly	Arg	Asp	Pro	Asp	Leu	His	Pro	Gly	980	985	990	
Asn	Val	Met	Val	Leu	Gly	Thr	Ala	Thr	Ser	Arg	Ser	Met	Gly	Thr	Cys	995	1000	1005	
Leu	Asn	Gly	Leu	Leu	Phe	Thr	Thr	Phe	His	Gly	Ala	Ser	Ser	Arg	Thr	1010	1015	1020	
Ile	Ala	Thr	Pro	Val	Gly	Ala	Leu	Asn	Pro	Arg	Trp	Trp	Ser	Ala	Ser	1025	1030	1035	1040
Asp	Asp	Val	Thr	Val	Tyr	Pro	Leu	Pro	Asp	Gly	Ala	Thr	Ser	Leu	Thr	1045	1050	1055	
Pro	Cys	Thr	Cys	Gln	Ala	Glu	Ser	Cys	Trp	Val	Ile	Arg	Ser	Asp	Gly	1060	1065	1070	
Ala	Leu	Cys	His	Gly	Leu	Ser	Lys	Gly	Asp	Lys	Val	Glu	Leu	Asp	Val	1075	1080	1085	
Ala	Met	Glu	Val	Ser	Asp	Phe	Arg	Gly	Ser	Ser	Gly	Ser	Pro	Val	Leu	1090	1095	1100	
Cys	Asp	Lys	Gly	His	Ala	Val	Arg	Met	Leu	Val	Ser	Val	Leu	His	Ser	1105	1110	1115	1120
Gly	Gly	Arg	Val	Thr	Ala	Ala	Arg	Phe	Thr	Arg	Pro	Trp	Thr	Gln	Val	1125	1130	1135	
Pro	Thr	Asp	Ala	Lys	Thr	Thr	Thr	Glu	Pro	Pro	Pro	Val	Pro	Ala	Lys	1140	1145	1150	
Gly	Val	Phe	Lys	Glu	Ala	Pro	Leu	Phe	Met	Pro	Thr	Gly	Ala	Gly	Lys	1155	1160	1165	
Ser	Thr	Arg	Val	Pro	Leu	Glu	Tyr	Gly	Asn	Met	Gly	His	Lys	Val	Leu	1170	1175	1180	
Ile	Leu	Asn	Pro	Ser	Val	Ala	Thr	Val	Arg	Ala	Met	Gly	Pro	Tyr	Met	1185	1190	1195	1200
Glu	Arg	Leu	Ala	Gly	Lys	His	Pro	Ser	Ile	Tyr	Cys	Gly	His	Asp	Thr	1205	1210	1215	
Thr	Ala	Phe	Thr	Arg	Ile	Thr	Asp	Ser	Pro	Leu	Thr	Tyr	Ser	Thr	Tyr	1220	1225	1230	
Gly	Arg	Phe	Leu	Ala	Asn	Pro	Arg	Gln	Met	Leu	Arg	Gly	Val	Ser	Val	1235	1240	1245	
Val	Ile	Cys	Asp	Glu	Cys	His	Ser	His	Asp	Ser	Thr	Val	Leu	Leu	Gly	1250	1255	1260	
Ile	Gly	Arg	Val	Arg	Glu	Leu	Ala	Arg	Gly	Cys	Gly	Val	Gln	Leu	Val	1265	1270	1275	1280
Leu	Tyr	Ala	Thr	Ala	Thr	Pro	Pro	Gly	Ser	Pro	Met	Thr	Gln	His	Pro	1285	1290	1295	
Ser	Ile	Ile	Glu	Thr	Lys	Leu	Asp	Val	Gly	Glu	Ile	Pro	Phe	Tyr	Gly	1300	1305	1310	
His	Gly	Ile	Pro	Leu	Glu	Arg	Met	Arg	Thr	Gly	Arg	His	Leu	Val	Phe	1315	1320	1325	
Cys	His	Ser	Lys	Ala	Glu	Cys	Glu	Arg	Leu	Ala	Gly	Gln	Phe	Ser	Ala	1330	1335	1340	
Arg	Gly	Val	Asn	Ala	Ile	Ala	Tyr	Tyr	Arg	Gly	Lys	Asp	Ser	Ser	Ile	1345	1350	1355	1360
Ile	Lys	Asp	Gly	Asp	Leu	Val	Val	Cys	Ala	Thr	Asp	Ala	Leu	Ser	Thr	1365	1370	1375	
Gly	Tyr	Thr	Gly	Asn	Phe	Asp	Ser	Val	Thr	Asp	Cys	Gly	Leu	Val	Val	1380	1385	1390	
Glu	Glu	Val	Val	Glu	Val	Thr	Leu	Asp	Pro	Thr	Ile	Thr	Ile	Ser	Leu	1395	1400	1405	
Arg	Thr	Val	Pro	Ala	Ser	Ala	Glu	Leu	Ser	Met	Gln	Arg	Arg	Gly	Arg	1410	1415	1420	
Thr	Gly	Arg	Gly	Arg	Ser	Gly	Arg	Tyr	Tyr	Tyr	Ala	Gly	Val	Gly	Lys	1425	1430	1435	1440

Ala Pro Ala Gly Val Val Arg Ser Gly Pro Val Trp Ser Ala Val Glu
 1445 1450 1455
 Ala Gly Val Thr Trp Tyr Gly Met Glu Pro Asp Leu Thr Ala Asn Leu
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 Leu Arg Leu Tyr Asp Asn Cys Pro Tyr Thr Ala Ala Val Ala Ala Asp
 1475 1480 1485
 Ile Gly Glu Ala Ala Val Phe Phe Ser Gly Leu Ala Pro Leu Arg Met
 1490 1495 1500
 His Pro Asp Val Ser Trp Ala Lys Val Arg Gly Val Asn Trp Pro Phe
 1505 1510 1515 1520
 Leu Val Gly Val Gln Arg Thr Met Cys Arg Glu Thr Leu Ser Pro Gly
 1525 1530 1535
 Pro Ser Asp Asp Pro Gln Trp Ala Gly Leu Lys Gly Pro Asn Pro Val
 1540 1545 1550
 Pro Leu Leu Leu Arg Trp Gly Asn Asp Leu Pro Ser Lys Val Ala Gly
 1555 1560 1565
 His His Ile Val Asp Asp Leu Val Arg Arg Leu Gly Val Ala Glu Gly
 1570 1575 1580
 Tyr Val Arg Cys Asp Ala Gly Pro Ile Leu Met Val Gly Leu Ala Ile
 1585 1590 1595 1600
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 Thr Asp Trp Asp Val Lys Gly Gly Gly Ser Pro Leu Tyr Arg His Gly
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 Arg Pro Gly Gly Glu Ser Ala Pro Ser Asp Ala Asn Thr Val Thr Asp
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 1780 1785 1790
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 Val Asn Ala Ala Ser Leu Val Phe Asp Phe Met Ala Gly Lys Leu Ser
 1825 1830 1835 1840
 Ser Glu Asp Leu Trp Tyr Ala Ile Pro Val Leu Thr Ser Pro Gly Ala
 1845 1850 1855
 Gly Leu Ala Gly Ile Ala Leu Gly Leu Val Leu Tyr Ser Ala Asn Asn
 1860 1865 1870
 Ser Gly Thr Thr Thr Trp Leu Asn Arg Leu Leu Thr Thr Leu Pro Arg
 1875 1880 1885
 Ser Ser Cys Ile Pro Asp Ser Tyr Phe Gln Gln Ala Asp Tyr Cys Asp
 1890 1895 1900
 Lys Val Ser Ala Val Leu Arg Arg Leu Ser Leu Thr Arg Thr Val Val
 1905 1910 1915 1920
 Ala Leu Val Asn Arg Glu Pro Lys Val Asp Glu Val Gln Val Gly Tyr
 1925 1930 1935

Val	Trp	Asp	Leu	Trp	Glu	Trp	Ile	Met	Arg	Gln	Val	Arg	Met	Val	Met		
			1940					1945					1950				
Ala	Arg	Leu	Arg	Ala	Leu	Cys	Pro	Val	Val	Ser	Leu	Pro	Leu	Trp	His		
			1955				1960						1965				
Cys	Gly	Glu	Gly	Trp	Ser	Gly	Glu	Trp	Leu	Leu	Asp	Gly	His	Val	Glu		
			1970				1975					1980					
Ser	Arg	Cys	Leu	Cys	Gly	Cys	Val	Ile	Thr	Gly	Asp	Val	Leu	Asn	Gly		
					1990					1995					2000		
Gln	Leu	Lys	Asp	Pro	Val	Tyr	Ser	Thr	Lys	Leu	Cys	Arg	His	Tyr	Trp		
				2005					2010					2015			
Met	Gly	Thr	Val	Pro	Val	Asn	Met	Leu	Gly	Tyr	Gly	Glu	Thr	Ser	Pro		
			2020				2025						2030				
Leu	Leu	Ala	Ser	Asp	Thr	Pro	Lys	Val	Val	Pro	Phe	Gly	Thr	Ser	Gly		
			2035				2040						2045				
Trp	Ala	Glu	Val	Val	Val	Thr	Pro	Thr	His	Val	Val	Ile	Arg	Arg	Thr		
			2050			2055					2060						
Ser	Ala	Tyr	Lys	Leu	Leu	Arg	Gln	Gln	Ile	Leu	Ser	Ala	Ala	Val	Ala		
				2070					2075						2080		
Glu	Pro	Tyr	Tyr	Val	Asp	Gly	Ile	Pro	Val	Ser	Trp	Asp	Ala	Asp	Ala		
				2085				2090						2095			
Arg	Ala	Pro	Ala	Met	Val	Tyr	Gly	Pro	Gly	Gln	Ser	Val	Thr	Ile	Asp		
			2100				2105						2110				
Gly	Glu	Arg	Tyr	Thr	Leu	Pro	His	Gln	Leu	Arg	Leu	Arg	Asn	Val	Ala		
			2115			2120						2125					
Pro	Ser	Glu	Val	Ser	Ser	Glu	Val	Ser	Ile	Asp	Ile	Gly	Thr	Glu	Thr		
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Glu	Asp	Ser	Glu	Leu	Thr	Glu	Ala	Asp	Leu	Pro	Pro	Ala	Ala	Ala	Ala		
			2145		2150			2155						2160			
Leu	Gln	Ala	Ile	Glu	Asn	Ala	Ala	Arg	Ile	Leu	Glu	Pro	His	Ile	Asp		
			2165			2170								2175			
Val	Ile	Met	Glu	Asp	Cys	Ser	Thr	Pro	Ser	Leu	Cys	Gly	Ser	Ser	Arg		
			2180				2185						2190				
Glu	Met	Pro	Val	Trp	Gly	Glu	Asp	Ile	Pro	Arg	Thr	Pro	Ser	Pro	Ala		
			2195			2200						2205					
Leu	Ile	Ser	Val	Thr	Glu	Ser	Ser	Pro	Asp	Glu	Lys	Thr	Pro	Ser	Val		
			2210			2215					2220						
Ser	Ser	Ser	Gln	Glu	Asp	Thr	Pro	Ser	Ser	Asp	Ser	Phe	Glu	Val	Ile		
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Gln	Glu	Ser	Glu	Thr	Ala	Glu	Gly	Glu	Glu	Ser	Val	Phe	Asn	Val	Ala		
			2245			2250							2255				
Leu	Ser	Val	Leu	Lys	Ala	Leu	Phe	Pro	Gln	Ser	Asp	Ala	Thr	Arg	Lys		
			2260			2265							2270				
Leu	Thr	Val	Lys	Met	Ser	Cys	Cys	Val	Glu	Lys	Ser	Val	Thr	Arg	Phe		
			2275			2280						2285					
Phe	Ser	Leu	Gly	Leu	Thr	Val	Ala	Asp	Val	Ala	Ser	Leu	Cys	Glu	Met		
			2290		2295					2300							
Glu	Ile	Gln	Asn	His	Thr	Ala	Tyr	Cys	Asp	Lys	Val	Arg	Thr	Pro	Leu		
			2305		2310				2315					2320			
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			2325			2330							2335				
Asp	Lys	Cys	Glu	Ala	Arg	Gln	Glu	Thr	Leu	Ala	Ser	Phe	Ser	Tyr	Ile		
			2340			2345							2350				
Trp	Ser	Gly	Val	Pro	Leu	Thr	Arg	Ala	Thr	Pro	Ala	Lys	Pro	Pro	Val		
			2355			2360						2365					
Val	Arg	Pro	Val	Gly	Ser	Leu	Leu	Val	Ala	Asp	Thr	Thr	Lys	Val	Tyr		
			2370		2375					2380							
Val	Thr	Asn	Pro	Asp	Asn	Val	Gly	Arg	Arg	Val	Asp	Lys	Val	Thr	Phe		
			2385		2390				2395					2400			
Trp	Arg	Ala	Pro	Arg	Val	His	Asp	Lys	Phe	Leu	Val	Asp	Ser	Ile	Glu		
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9

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<400> 17
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<210> 18
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<211> 2842
<212> PRT
<213> Hepatitis G virus

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 20          25          30
Asn Cys Cys Ala Pro Glu Asp Ile Gly Phe Cys Leu Glu Gly Gly Cys
 35          40          45
Leu Val Ala Leu Gly Cys Thr Val Cys Thr Asp Gln Cys Trp Pro Leu
 50          55          60
Tyr Gln Ala Gly Leu Ala Val Arg Pro Gly Lys Ser Ala Ala Gln Leu
 65          70          75          80
Val Gly Glu Leu Gly Ser Leu Tyr Gly Pro Leu Ser Val Ser Ala Tyr
 85          90          95
Val Ala Gly Ile Leu Gly Leu Gly Glu Val Tyr Ser Gly Val Leu Thr
 100         105         110
Val Gly Val Ala Leu Thr Arg Arg Val Tyr Pro Val Pro Asn Leu Thr
 115         120         125
Cys Ala Val Glu Cys Glu Leu Lys Trp Glu Ser Glu Phe Trp Arg Trp
 130         135         140
Thr Glu Gln Leu Ala Ser Asn Tyr Trp Ile Leu Glu Tyr Leu Trp Lys
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Val Pro Phe Asp Phe Trp Arg Gly Val Met Ser Leu Thr Pro Leu Leu
 165         170         175
Val Cys Val Ala Ala Leu Leu Leu Leu Glu Gln Arg Ile Val Met Val
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Phe Leu Leu Val Thr Met Ala Gly Met Ser Gln Gly Ala Pro Ala Ser
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Val Leu Gly Ser Arg Pro Phe Asp Tyr Gly Leu Thr Trp Gln Thr Cys
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Ser Cys Lys Ala Asn Gly Ser Arg Ile Pro Thr Gly Glu Lys Val Trp
 225         230         235         240
Asp Arg Gly Asn Val Thr Leu Leu Cys Asp Cys Pro Asn Gly Pro Trp
 245         250         255
Val Trp Leu Pro Ala Phe Cys Gln Ala Val Gly Trp Gly Asp Pro Ile
 260         265         270
Thr His Trp Ser His Gly Gln Asn Arg Trp Pro Leu Ser Cys Pro Gln
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Tyr Val Tyr Gly Ser Val Ser Val Thr Cys Val Trp Gly Ser Ala Ser
 290         295         300
Trp Phe Ala Ser Thr Gly Gly Arg Asp Ser Lys Ile Asp Val Trp Ser
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Leu Val Pro Val Gly Ser Ala Thr Cys Thr Ile Ala Ala Leu Gly Ser
 325         330         335
Ser Asp Arg Asp Thr Val Val Glu Leu Ser Glu Trp Gly Val Pro Cys
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Val	Thr	Cys	Ile	Leu	Asp	Arg	Arg	Pro	Ala	Ser	Cys	Gly	Thr	Cys	Val	355	360	365
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Cys	Gly	Thr	Gly	Pro	Arg	Leu	Thr	Lys	Asp	Leu	Glu	Ala	Val	Pro	Phe	385	390	395
Val	Asn	Arg	Thr	Thr	Pro	Phe	Thr	Ile	Arg	Gly	Pro	Leu	Gly	Asn	Gln	405	410	415
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Ala	Ile	Ala	Leu	Leu	Ser	Ser	Met	Ser	Ala	Gly	Gly	Trp	Arg	His	Lys	690	695	700
Ala	Val	Ile	Tyr	Arg	Thr	Trp	Cys	Lys	Gly	Tyr	Gln	Ala	Ile	Arg	Gln	705	710	715
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 Val Ser Ile Val Asp Lys Leu Phe Ala Gly Gly Trp Ala Ala Val Val
 1650 1655 1660
 Gly His Cys His Ser Val Ile Ala Ala Ala Val Ala Ala Tyr Gly Ala
 1665 1670 1675 1680
 Ser Arg Ser Pro Pro Leu Ala Ala Ala Ala Ser Tyr Leu Met Gly Leu
 1685 1690 1695
 Gly Val Gly Gly Asn Ala Gln Thr Arg Leu Ala Ser Ala Leu Leu Leu
 1700 1705 1710
 Gly Ala Ala Gly Thr Ala Leu Gly Thr Pro Val Val Gly Leu Thr Met
 1715 1720 1725
 Ala Gly Ala Phe Met Gly Gly Ala Ser Val Ser Pro Ser Leu Val Thr
 1730 1735 1740
 Ile Leu Leu Gly Ala Val Gly Gly Trp Glu Gly Val Val Asn Ala Ala
 1745 1750 1755 1760
 Ser Leu Val Phe Asp Phe Met Ala Gly Lys Leu Ser Ser Glu Asp Leu
 1765 1770 1775
 Trp Tyr Ala Ile Pro Val Leu Thr Ser Pro Gly Ala Gly Leu Ala Gly
 1780 1785 1790
 Ile Ala Leu Gly Leu Val Leu Tyr Ser Ala Asn Asn Ser Gly Thr Thr
 1795 1800 1805
 Thr Trp Leu Asn Arg Leu Leu Thr Thr Leu Pro Arg Ser Ser Cys Ile
 1810 1815 1820
 Pro Asp Ser Tyr Phe Gln Gln Ala Asp Tyr Cys Asp Lys Val Ser Ala
 1825 1830 1835 1840

Val	Leu	Arg	Arg	Leu	Ser	Leu	Thr	Arg	Thr	Val	Val	Ala	Leu	Val	Asn	
				1845					1850						1855	
Arg	Glu	Pro	Lys	Val	Asp	Glu	Val	Gln	Val	Gly	Tyr	Val	Trp	Asp	Leu	
			1860					1865						1870		
Trp	Glu	Trp	Ile	Met	Arg	Gln	Val	Arg	Met	Val	Met	Ala	Arg	Leu	Arg	
			1875				1880						1885			
Ala	Leu	Cys	Pro	Val	Val	Ser	Leu	Pro	Leu	Trp	His	Cys	Gly	Glu	Gly	
			1890			1895					1900					
Trp	Ser	Gly	Glu	Trp	Leu	Leu	Asp	Gly	His	Val	Glu	Ser	Arg	Cys	Leu	
1905					1910					1915					1920	
Cys	Gly	Cys	Val	Ile	Thr	Gly	Asp	Val	Leu	Asn	Gly	Gln	Leu	Lys	Glu	
				1925					1930					1935		
Pro	Val	Tyr	Ser	Thr	Lys	Leu	Cys	Arg	His	Tyr	Trp	Met	Gly	Thr	Val	
			1940					1945					1950			
Pro	Val	Asn	Met	Leu	Gly	Tyr	Gly	Glu	Thr	Ser	Pro	Leu	Leu	Ala	Ser	
			1955				1960					1965				
Asp	Thr	Pro	Lys	Val	Val	Pro	Phe	Gly	Thr	Ser	Gly	Trp	Ala	Glu	Val	
			1970			1975					1980					
Val	Val	Thr	Pro	Thr	His	Val	Val	Ile	Arg	Arg	Thr	Ser	Ala	Tyr	Lys	
1985					1990					1995					2000	
Leu	Leu	Arg	Gln	Gln	Ile	Leu	Ser	Ala	Ala	Val	Ala	Glu	Pro	Tyr	Tyr	
				2005					2010					2015		
Val	Asp	Gly	Ile	Pro	Val	Ser	Trp	Asp	Ala	Asp	Ala	Arg	Ala	Pro	Ala	
			2020					2025				2030				
Met	Val	Tyr	Gly	Pro	Gly	Gln	Ser	Val	Thr	Ile	Asp	Gly	Glu	Arg	Tyr	
			2035			2040						2045				
Thr	Leu	Pro	His	Gln	Leu	Arg	Leu	Arg	Asn	Val	Ala	Pro	Ser	Glu	Val	
			2050			2055				2060						
Ser	Ser	Glu	Met	Thr	Ile	Asp	Leu	Gly	Thr	Glu	Thr	Glu	Asp	Ser	Glu	
2065					2070					2075				2080		
Leu	Thr	Glu	Ala	Asp	Leu	Pro	Pro	Ala	Ala	Ala	Ala	Leu	Gln	Ala	Ile	
				2085					2090					2095		
Glu	Asn	Ala	Ala	Arg	Ile	Leu	Glu	Pro	Leu	Ile	Asp	Val	Ile	Met	Glu	
			2100					2105				2110				
Asp	Cys	Ser	Thr	Pro	Ser	Leu	Cys	Gly	Ser	Ser	Arg	Glu	Met	Pro	Val	
			2115			2120					2125					
Trp	Gly	Gly	Asp	Ile	Pro	Arg	Thr	Pro	Ser	Pro	Ala	Leu	Ile	Ser	Val	
			2130			2135					2140					
Thr	Glu	Ser	Ser	Ser	Asp	Glu	Lys	Thr	Pro	Ser	Val	Ser	Ser	Ser	Gln	
2145					2150					2155					2160	
Glu	Asp	Thr	Pro	Ser	Ser	Asp	Ser	Phe	Glu	Val	Ile	Gln	Glu	Ser	Glu	
				2165					2170				2175			
Thr	Ala	Glu	Gly	Glu	Glu	Ser	Val	Phe	Asn	Val	Ala	Leu	Ser	Val	Leu	
			2180					2185					2190			
Lys	Ala	Leu	Phe	Pro	Gln	Ser	Asp	Ala	Thr	Arg	Lys	Leu	Thr	Val	Lys	
			2195				2200					2205				
Met	Ser	Cys	Cys	Ala	Glu	Lys	Ser	Val	Thr	Arg	Phe	Phe	Ser	Leu	Gly	
			2210			2215					2220					
Leu	Thr	Val	Ala	Asp	Val	Ala	Ser	Leu	Cys	Glu	Met	Glu	Ile	Gln	Asn	
2225					2230					2235				2240		
His	Thr	Ala	Tyr	Cys	Asp	Lys	Val	Arg	Thr	Pro	Leu	Glu	Leu	Gln	Val	
				2245					2250					2255		
Gly	Cys	Leu	Val	Gly	Asn	Glu	Leu	Thr	Phe	Glu	Cys	Asp	Lys	Cys	Glu	
			2260					2265					2270			
Ala	Arg	Gln	Glu	Thr	Leu	Ala	Ser	Phe	Ser	Tyr	Ile	Trp	Ser	Gly	Val	
			2275					2280					2285			
Pro	Leu	Thr	Arg	Ala	Thr	Pro	Ala	Lys	Pro	Pro	Val	Val	Arg	Pro	Val	
			2290			2295					2300					
Gly	Ser	Leu	Leu	Val	Ala	Asp	Thr	Thr	Lys	Val	Tyr	Val	Thr	Asn	Pro	
2305					2310					2315				2320		
Asp	Asn	Val	Gly	Arg	Arg	Val	Asp	Lys	Val	Thr	Phe	Trp	Arg	Ala	Pro	
				2325					2330					2335		

Arg	Val	His	Asp	Lys	Tyr	Leu	Val	Asp	Ser	Ile	Glu	Arg	Ala	Lys	Arg	2340	2345	2350
Ala	Ala	Gln	Ala	Cys	Leu	Ser	Met	Gly	Tyr	Thr	Tyr	Glu	Glu	Ala	Ile	2355	2360	2365
Arg	Thr	Val	Arg	Pro	His	Ala	Ala	Met	Gly	Trp	Gly	Ser	Lys	Val	Ser	2370	2375	2380
Val	Lys	Asp	Leu	Ala	Thr	Pro	Ala	Gly	Lys	Met	Ala	Val	His	Asp	Arg	2385	2390	2395
Leu	Gln	Glu	Ile	Leu	Glu	Gly	Thr	Pro	Val	Pro	Phe	Thr	Leu	Thr	Val	2405	2410	2415
Lys	Lys	Glu	Val	Phe	Phe	Lys	Asp	Arg	Lys	Glu	Glu	Lys	Ala	Pro	Arg	2420	2425	2430
Leu	Ile	Val	Phe	Pro	Pro	Leu	Asp	Phe	Arg	Ile	Ala	Glu	Lys	Leu	Ile	2435	2440	2445
Leu	Gly	Asp	Pro	Gly	Arg	Val	Ala	Lys	Ala	Val	Leu	Gly	Gly	Ala	Tyr	2450	2455	2460
Ala	Phe	Gln	Tyr	Thr	Pro	Asn	Gln	Arg	Val	Lys	Glu	Met	Leu	Lys	Leu	2465	2470	2475
Trp	Glu	Ser	Lys	Lys	Thr	Pro	Cys	Ala	Ile	Cys	Val	Asp	Ala	Thr	Cys	2485	2490	2495
Phe	Asp	Ser	Ser	Ile	Thr	Glu	Glu	Asp	Val	Ala	Leu	Glu	Thr	Glu	Leu	2500	2505	2510
Tyr	Ala	Leu	Ala	Ser	Asp	His	Pro	Glu	Trp	Val	Arg	Ala	Leu	Gly	Lys	2515	2520	2525
Tyr	Tyr	Ala	Ser	Gly	Thr	Met	Val	Thr	Pro	Glu	Gly	Val	Pro	Val	Gly	2530	2535	2540
Glu	Arg	Tyr	Cys	Arg	Ser	Ser	Gly	Val	Leu	Thr	Thr	Ser	Ala	Ser	Asn	2545	2550	2555
Cys	Leu	Thr	Cys	Tyr	Ile	Lys	Val	Glu	Ala	Ala	Cys	Glu	Arg	Val	Gly	2565	2570	2575
Leu	Lys	Asn	Val	Ser	Leu	Leu	Ile	Ala	Gly	Asp	Asp	Cys	Leu	Ile	Ile	2580	2585	2590
Cys	Glu	Arg	Pro	Val	Cys	Asp	Pro	Ser	Asp	Ala	Leu	Gly	Arg	Ala	Leu	2595	2600	2605
Ala	Ser	Tyr	Gly	Tyr	Ala	Cys	Glu	Pro	Ser	Tyr	His	Ala	Ser	Leu	Asp	2610	2615	2620
Thr	Ala	Pro	Phe	Cys	Ser	Thr	Trp	Leu	Ala	Glu	Cys	Asn	Ala	Asp	Gly	2625	2630	2635
Lys	Arg	His	Phe	Phe	Leu	Thr	Thr	Asp	Phe	Arg	Arg	Ala	Leu	Ala	Arg	2645	2650	2655
Met	Ser	Ser	Glu	Tyr	Ser	Asp	Pro	Met	Ala	Ser	Ala	Ile	Gly	Tyr	Ile	2660	2665	2670
Leu	Leu	Tyr	Pro	Trp	His	Pro	Ile	Thr	Arg	Trp	Val	Ile	Ile	Pro	His	2675	2680	2685
Val	Leu	Thr	Cys	Ala	Phe	Arg	Gly	Gly	Gly	Thr	Pro	Ser	Asp	Pro	Val	2690	2695	2700
Trp	Cys	Gln	Val	His	Gly	Asn	Tyr	Tyr	Lys	Phe	Pro	Leu	Asp	Lys	Leu	2705	2710	2715
Pro	Asn	Ile	Ile	Val	Ala	Leu	His	Gly	Pro	Ala	Ala	Leu	Arg	Val	Thr	2725	2730	2735
Ala	Asp	Thr	Thr	Lys	Thr	Lys	Met	Glu	Ala	Gly	Lys	Val	Leu	Ser	Asp	2740	2745	2750
Leu	Lys	Leu	Pro	Gly	Leu	Ala	Val	His	Arg	Lys	Lys	Ala	Gly	Ala	Leu	2755	2760	2765
Arg	Thr	Arg	Met	Leu	Arg	Ser	Arg	Gly	Trp	Ala	Glu	Leu	Ala	Arg	Gly	2770	2775	2780
Leu	Leu	Trp	His	Pro	Gly	Leu	Arg	Leu	Pro	Pro	Pro	Glu	Ile	Ala	Gly	2785	2790	2795
Ile	Pro	Gly	Gly	Phe	Pro	Ser	Pro	Pro	Pro	Phe	Met	Gly	Val	Val	His	2805	2810	2815
Gln	Leu	Asp	Phe	Thr	Ser	Gln	Arg	Ser	Arg	Trp	Arg	Gly	Leu	Gly	Val	2820	2825	2830

Leu Ala Leu Leu Ile Val Ala Leu Phe Gly
 2835 2840

<210> 21
 <211> 414
 <212> PRT
 <213> Hepatitis G virus

<400> 21
 Val Ala Leu Val Asn Arg Glu Pro Lys Val Asp Glu Val Gln Val Gly
 1 5 10 15
 Tyr Val Trp Asp Leu Trp Glu Trp Ile Met Arg Gln Val Arg Met Val
 20 25 30
 Met Ala Arg Leu Arg Ala Leu Cys Pro Val Val Ser Leu Pro Leu Trp
 35 40 45
 His Cys Gly Glu Gly Trp Ser Gly Glu Trp Leu Leu Asp Gly His Val
 50 55 60
 Glu Ser Arg Cys Leu Cys Gly Cys Val Ile Thr Gly Asp Val Leu Asn
 65 70 75 80
 Gly Gln Leu Lys Glu Pro Val Tyr Ser Thr Lys Leu Cys Arg His Tyr
 85 90 95
 Trp Met Gly Thr Val Pro Val Asn Met Leu Gly Tyr Gly Glu Thr Ser
 100 105 110
 Pro Leu Leu Ala Ser Asp Thr Pro Lys Val Val Pro Phe Gly Thr Ser
 115 120 125
 Gly Trp Ala Glu Val Val Val Thr Pro Thr His Val Val Ile Arg Arg
 130 135 140
 Thr Ser Ala Tyr Lys Leu Leu Arg Gln Gln Ile Leu Ser Ala Ala Val
 145 150 155 160
 Ala Glu Pro Tyr Tyr Val Asp Gly Ile Pro Val Ser Trp Asp Ala Asp
 165 170 175
 Ala Arg Ala Pro Ala Met Val Tyr Gly Pro Gly Gln Ser Val Thr Ile
 180 185 190
 Asp Gly Glu Arg Tyr Thr Leu Pro His Gln Leu Arg Leu Arg Asn Val
 195 200 205
 Ala Pro Ser Glu Val Ser Ser Glu Met Thr Ile Asp Leu Gly Thr Glu
 210 215 220
 Thr Glu Asp Ser Glu Leu Thr Glu Ala Asp Leu Pro Pro Ala Ala Ala
 225 230 235 240
 Ala Leu Gln Ala Ile Glu Asn Ala Ala Arg Ile Leu Glu Pro Leu Ile
 245 250 255
 Asp Val Ile Met Glu Asp Cys Ser Thr Pro Ser Leu Cys Gly Ser Ser
 260 265 270
 Arg Glu Met Pro Val Trp Gly Gly Asp Ile Pro Arg Thr Pro Ser Pro
 275 280 285
 Ala Leu Ile Ser Val Thr Glu Ser Ser Ser Asp Glu Lys Thr Pro Ser
 290 295 300
 Val Ser Ser Ser Gln Glu Asp Thr Pro Ser Ser Asp Ser Phe Glu Val
 305 310 315 320
 Ile Gln Glu Ser Glu Thr Ala Glu Gly Glu Glu Ser Val Phe Asn Val
 325 330 335
 Ala Leu Ser Val Leu Lys Ala Leu Phe Pro Gln Ser Asp Ala Thr Arg
 340 345 350
 Lys Leu Thr Val Lys Met Ser Cys Cys Ala Glu Lys Ser Val Thr Arg
 355 360 365
 Phe Phe Ser Leu Gly Leu Thr Val Ala Asp Val Ala Ser Leu Cys Glu
 370 375 380
 Met Glu Ile Gln Asn His Thr Ala Tyr Cys Asp Lys Val Arg Thr Pro
 385 390 395 400
 Leu Glu Leu Gln Val Gly Cys Leu Val Gly Asn Glu Leu Thr
 405 410

<210> 22
 <211> 414
 <212> PRT
 <213> Hepatitis G virus

<400> 22
 Val Ala Leu Val Asn Arg Glu Pro Lys Val Asp Glu Val Gln Val Gly
 1 5 10 15
 Tyr Val Trp Asp Leu Trp Glu Trp Ile Met Arg Gln Val Arg Met Val
 20 25 30
 Met Ala Arg Leu Arg Ala Leu Cys Pro Val Val Ser Leu Pro Leu Trp
 35 40 45
 His Cys Gly Glu Gly Trp Ser Gly Glu Trp Leu Leu Asp Gly His Val
 50 55 60
 Glu Ser Arg Cys Leu Cys Gly Cys Val Ile Thr Gly Asp Val Leu Asn
 65 70 75 80
 Gly Gln Leu Lys Asp Pro Val Tyr Ser Thr Lys Leu Cys Arg His Tyr
 85 90 95
 Trp Met Gly Thr Val Pro Val Asn Met Leu Gly Tyr Gly Glu Thr Ser
 100 105 110
 Pro Leu Leu Ala Ser Asp Thr Pro Lys Val Val Pro Phe Gly Thr Ser
 115 120 125
 Gly Trp Ala Glu Val Val Val Thr Pro Thr His Val Val Ile Arg Arg
 130 135 140
 Thr Ser Ala Tyr Lys Leu Leu Arg Gln Gln Ile Leu Ser Ala Ala Val
 145 150 155 160
 Ala Glu Pro Tyr Tyr Val Asp Gly Ile Pro Val Ser Trp Asp Ala Asp
 165 170 175
 Ala Arg Ala Pro Ala Met Val Tyr Gly Pro Gly Gln Ser Val Thr Ile
 180 185 190
 Asp Gly Glu Arg Tyr Thr Leu Pro His Gln Leu Arg Leu Arg Asn Val
 195 200 205
 Ala Pro Ser Glu Val Ser Ser Glu Val Ser Ile Asp Ile Gly Thr Glu
 210 215 220
 Thr Glu Asp Ser Glu Leu Thr Glu Ala Asp Leu Pro Pro Ala Ala Ala
 225 230 235 240
 Ala Leu Gln Ala Ile Glu Asn Ala Ala Arg Ile Leu Glu Pro His Ile
 245 250 255
 Asp Val Ile Met Glu Asp Cys Ser Thr Pro Ser Leu Cys Gly Ser Ser
 260 265 270
 Arg Glu Met Pro Val Trp Gly Glu Asp Ile Pro Arg Thr Pro Ser Pro
 275 280 285
 Ala Leu Ile Ser Val Thr Glu Ser Ser Pro Asp Glu Lys Thr Pro Ser
 290 295 300
 Val Ser Ser Ser Gln Glu Asp Thr Pro Ser Ser Asp Ser Phe Glu Val
 305 310 315 320
 Ile Gln Glu Ser Glu Thr Ala Glu Gly Glu Glu Ser Val Phe Asn Val
 325 330 335
 Ala Leu Ser Val Leu Lys Ala Leu Phe Pro Gln Ser Asp Ala Thr Arg
 340 345 350
 Lys Leu Thr Val Lys Met Ser Cys Cys Val Glu Lys Ser Val Thr Arg
 355 360 365
 Phe Phe Ser Leu Gly Leu Thr Val Ala Asp Val Ala Ser Leu Cys Glu
 370 375 380
 Met Glu Ile Gln Asn His Thr Ala Tyr Cys Asp Lys Val Arg Thr Pro
 385 390 395 400
 Leu Glu Leu Gln Val Gly Cys Leu Val Gly Asn Glu Leu Thr
 405 410

<210> 23
 <211> 97
 <212> DNA

<213> Hepatitis G virus

<400> 23

tctgggcaaa gtgtcaccat tgacggggag cgctacacct tgccgcacca gttgcggctc	60
aggaacgtgg cgccctctga ggtttcatcc gaggtgt	97

<210> 24

<211> 97

<212> DNA

<213> Hepatitis G virus

<400> 24

tctgggcaaa gcgttaccat tgacggggag cgctacacct tgccgcacca gttgcggctc	60
aggaacgtga cgccctctga ggtttcatcc gaggtgt	97

<210> 25

<211> 97

<212> DNA

<213> Hepatitis G virus

<400> 25

tctgggcaaa gtgtcaccat tgacggggag cgctacacct tgccgcacca gttgcggctc	60
aggaacgtgg cgccctctga ggtttcatcc gaggtgt	97

<210> 26

<211> 97

<212> DNA

<213> Hepatitis G virus

<400> 26

tctgggcaaa gcgttaccat tgacggggag cgctacacct tgccgcacca gttgcggctc	60
aggaacgtgg cgccctctga ggtttcatcc gaggtgt	97

<210> 27

<211> 97

<212> DNA

<213> Hepatitis G virus

<400> 27

tctgggcaaa gcgttaccat tgacggggag cgctacacct tgccccacca gctgaggctt	60
aggaacgtgg cgccctctga ggtttcatcc gaggtgt	97

<210> 28

<211> 97

<212> DNA

<213> Hepatitis G virus

<400> 28

tctgggcaaa gtgtcaccat tgacggggag cgctacacct tgccccacca gctgaggctt	60
aggaacgtgg cgccctctga ggtttcatcc gaggtgt	97

<210> 29

<211> 97

<212> DNA

<213> Hepatitis G virus

<400> 29

tctgggcaaa gtgttaccat tgacggggag cgctacacct tgccccacca gctgaggctt	60
aggaacgtgg cgccctctga ggtttcatcc gaggtgt	97

<210> 30

<211> 97

<212> DNA
 <213> Hepatitis G virus

<400> 30
 tctgggcaaa gtgtcaccat tgacggggag cgctacacct tgccccacca gctgaggctt 60
 aggaacgtgg cgccctctga ggtttcatcc gaggtgt 97

<210> 31
 <211> 97
 <212> DNA
 <213> Hepatitis G virus

<400> 31
 tctgggcaaa gcgtcaccat tgacggggag cgctacacct tgccccacca gctgaggctt 60
 aggaacgtgg cgccctctga ggtttcatcc gaggtgt 97

<210> 32
 <211> 97
 <212> DNA
 <213> Hepatitis G virus

<400> 32
 ccatagacat tgggacggag actgaggatt cagaactgac tgaggctgac ctgccgccgg 60
 cagctgcggc cctccaggcg atcgagaatg ctgcgag 97

<210> 33
 <211> 97
 <212> DNA
 <213> Hepatitis G virus

<400> 33
 ccatagacat tgggacggag actgaggatt cagaactgac tgaggctgac ctgtcgccgg 60
 cagctgcggc cctccaggcg atcgagaatg ctgcgag 97

<210> 34
 <211> 97
 <212> DNA
 <213> Hepatitis G virus

<400> 34
 ccatagacat tgggacggag actgaggatt cagaactgac tgaggctgac ctgccgccgg 60
 cagccgcggc cctccaggcg atcgagaatg ctgcgag 97

<210> 35
 <211> 97
 <212> DNA
 <213> Hepatitis G virus

<400> 35
 ccatagacat tgggacggag actgaggatt cagaactgac tgaggctgac ctgccgccgg 60
 cagctgcggc cctccaggcg atcgagaatg ctgcgag 97

<210> 36
 <211> 97
 <212> DNA
 <213> Hepatitis G virus

<400> 36
 ccattgacat tgggacggag actgaagact cagaactgac tgaggccgat ctgccgccgg 60
 cggctgctgc tctccaagcg attgagaatg ctgcgag 97

<210> 37
 <211> 97
 <212> DNA
 <213> Hepatitis G virus

<400> 37
 ccattgacat tgggacggag actgaagact cagaactgac tgaggccgat ctgccgccgg 60
 cggctgctgc tctccaagcg attgagaatg ctgcgag 97

<210> 38
 <211> 97
 <212> DNA
 <213> Hepatitis G virus

<400> 38
 ccattgacat tgggacggag actgaagact cagaactgac tgaggccgat ctgccgccgg 60
 cggctgctgc tctccaagcg attgagaatg ctgcgag 97

<210> 39
 <211> 97
 <212> DNA
 <213> Hepatitis G virus

<400> 39
 ccattgacat tgggacggag actgaagact cagaactgac tgaggccgat ctgccgccgg 60
 cggctgctgc tctccaagcg attgagaatg ctgcgag 97

<210> 40
 <211> 97
 <212> DNA
 <213> Hepatitis G virus

<400> 40
 ccattgacat tgggacggag actgaagact cagaactgac tgaggccgat ctgccgccgg 60
 cggctgctgc tctccaagcg attgagaatg ctgcgag 97

<210> 41
 <211> 15
 <212> PRT
 <213> Hepatitis G virus

<400> 41
 Phe Gln Tyr Thr Pro Asn Gln Arg Ile Arg Glu Met Leu Lys Leu
 1 5 10 15

<210> 42
 <211> 15
 <212> PRT
 <213> Hepatitis G virus

<400> 42
 Phe Gln Tyr Thr Pro Asn Gln Arg Val Lys Glu Met Leu Lys Leu
 1 5 10 15

<210> 43
 <211> 16
 <212> PRT
 <213> Hepatitis G virus

<400> 43
 Gly Ile Pro Gly Ala Phe Pro Leu Ser Pro Pro Tyr Met Gly Val Val
 1 5 10 15

<210> 44
<211> 16
<212> PRT
<213> Hepatitis G virus

<400> 44
Gly Ile Pro Gly Gly Phe Ser Pro Ser Pro Pro Phe Met Gly Val Val
1 5 10 15